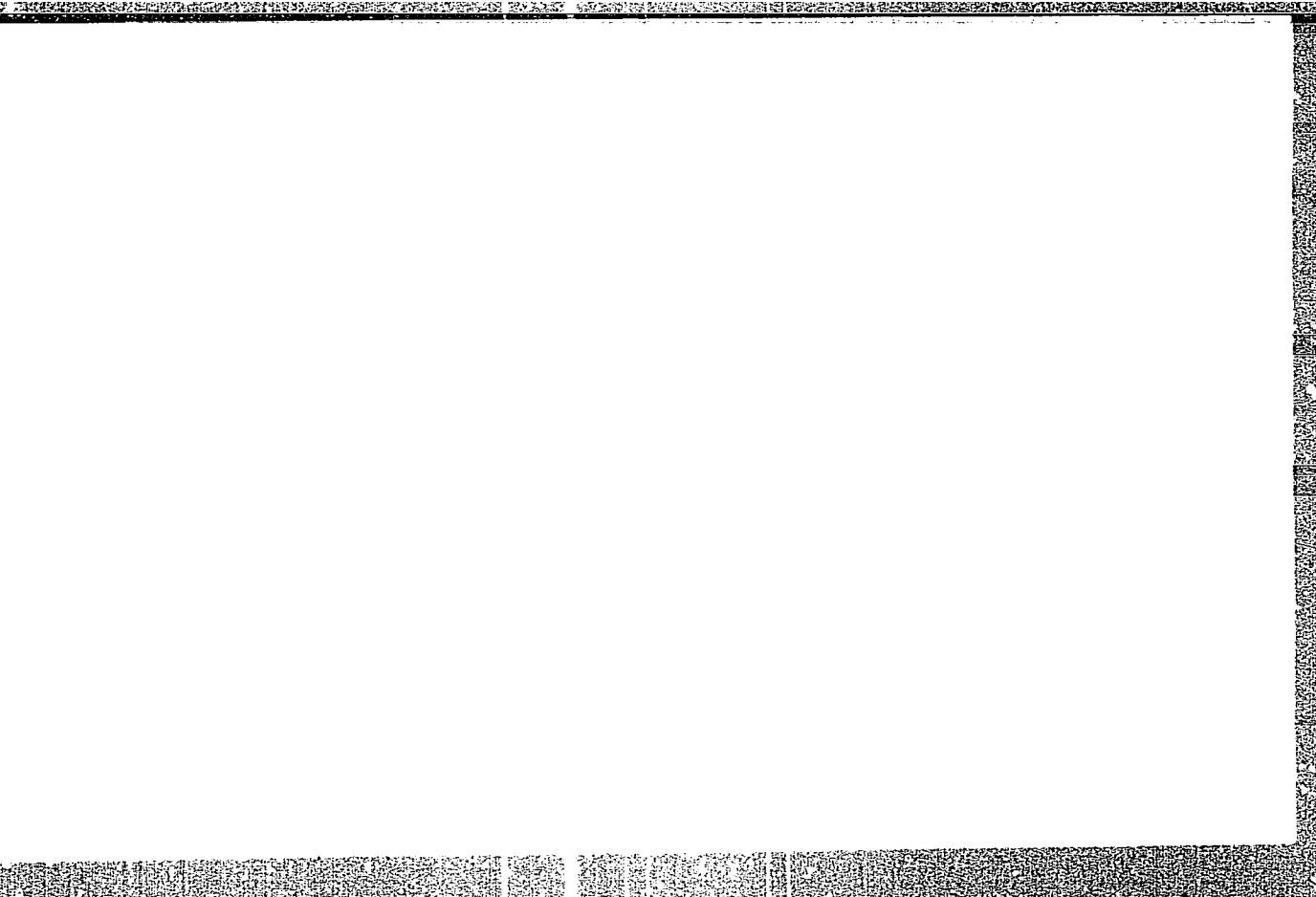


**"APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757110008-1**



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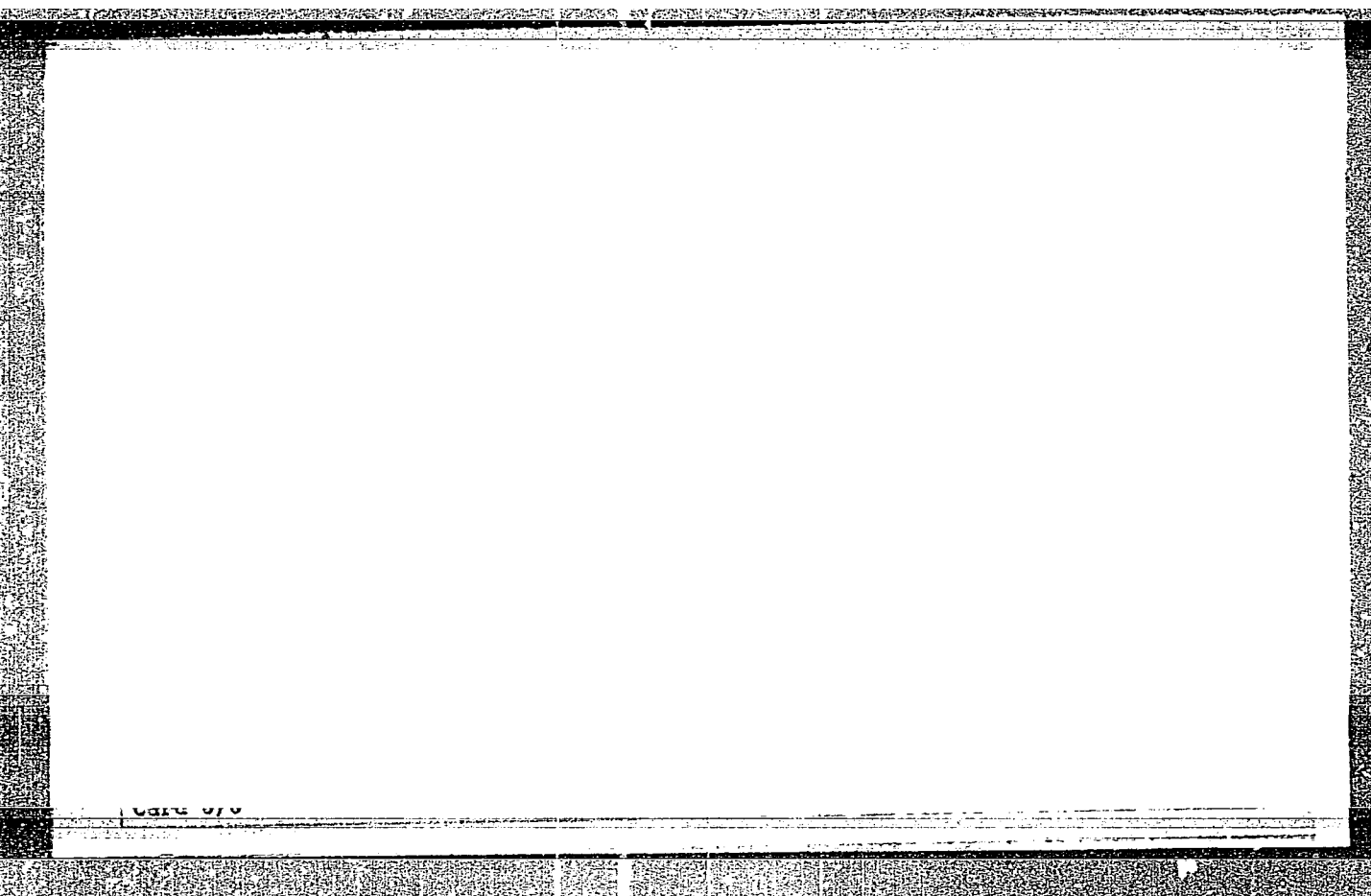
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**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757110008-1"**

TSINMAN, A.I.

Oxygen overvoltage on iron in alkaline solutions. Zhur.fiz.khim. 37 no.7:  
1598-1600 J1 '63. (MIRA 17:2)

1. Gosudarstvennyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza, Lisichanskiy filial.

TSYTLENOK, A., inzh.; ~~TSINMAN, A., inzh.~~; SHVARTSMAN, G., inzh.;  
SVITKIN, M., inzh.

Window units made of wood wastes. Na stroi. Ros. 4 no. 6:20-21  
Je '63. (MIRA 16:6)  
(Windows) (Wood waste)

KUZUB, V.S.; TSINMAN, A.I.; KUZUB, L.G.; DOLOTOVA, T.S.

Intercrystallite corrosion of stainless steels in a strong nitric acid. Zhur.prikl.khim. 35 no.12:2794-2796 D '62. (MIRA 16:5)

1. Lisichanskiy filial Gosudarstvennogo instituta azotnoy promyshlennosti.

(Steel, Stainless--Corrosion)

TSINMAN, A.Z.

The landed gentry produces for the market in Vologda Province  
during the second half of the 19th century. Volog. krai no.2:  
328-340 '60. (MIRA 14:11)  
(Vologda Province--Agriculture--Economic aspects)

L 56675-65 ENT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM  
 ACCESSION NR: AP5017850

UR/0286/65/000/011/0081/0081  
 678.028.294

AUTHOR: Pesin, L. M.; Potekhina, Ye. S.; Gurman, I. M.; Rabkina, A. E.; Runova, S. M.; Tolman, F. Ye.; Halyshova, Ye. V.

TITLE: A method for producing epoxy materials. Class 39, No. 171582

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 11, 1965, 81

TOPIC TAGS: epoxy resin, epoxy plastic

ABSTRACT: This Author's Certificate introduces: 1. A method for producing epoxy materials using a hardener based on anilinoformaldehyde condensate. A wider selection of epoxy materials is produced by using the product of the interaction between anhydroformaldehyde aniline and monoethynolamine as the hardener. 2. A modification of this method in which the hardener is the product of the interaction between anhydroformaldehyde aniline and monoethynolamine in a mixture with other epoxy resin hardeners of the amine type.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific

Card 1/2



L 56675-65

ACCESSION NR: AP5017850

Research Institute of Plastics)

SUBMITTED: 19Mar64

ENCL: 00

SUB CODE: MT, 00

NO REF SOV: 000

OTHER: 000

Card 2/2

L 01151-66 EWT(m)/EPF(o)/EMP(j)/T RM

ACCESSION NR: AP5022002

UZ/0226/85/000/014/0078/0077  
678.644

AUTHOR: Gosteva, O. K. (deceased); Utyanskiy, Z. S.; Pesin, L. N.; Runova, S. M.; Rivkina, Ye. G.; Chefranova, E. K.; Rotkovskaya, L. A.; Tsinman, F. Ye.

TITLE: A method for producing epoxy resins. Class 39, No. 172987

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 76-77

TOPIC TAGS: synthetic material, epoxy plastic, phenol

ABSTRACT: This Author's Certificate introduces a method for producing epoxy resins hardened by anhydrides of unsaturated dicarboxylic acids. Epichlorohydrin is interacted with a phenol in an alkaline medium. Resins with high thermal stability are produced by using dimethylvinylenthylnylphenol or cresols or xlenols as the phenol.

ASSOCIATION: Moskovskiy nauchno-issledovatel'skiy institut plastmass (Moscow Scientific Research Institute of Plastics)

SUBMITTED: 19Feb64

ENCL: 00

SUB CODE: NT

NO REF SOV: 000

OTHER: 000

Card 1/1 DP

L 44372-66		EWI(m)/EWP(j)/T/EWP(v)		IJP(c)		RM/WH	
ACC NR: AP6023058		(A)		SOURCE CODE: UR/0191/66/000/004/0008/0009			
AUTHOR: <sup>(CONDENSED)</sup> Gosteva, O. K.; Utyanskiy, Z. S.; Runova, S. M.; Rivkina, Ye. G.; Tsинman, F. Ye.							
ORG: none							
TITLE: <sup>15</sup> Epoxy resins based on phenols with vinylacetylene type substituents							
SOURCE: Plasticheskiye massy, no. 4, 1966, 8-9							
TOPIC TAGS: epoxy plastic, phenol, phenolic plastic, vinyl plastic, IR spectrum, adhesive							
ABSTRACT: An epoxy resin was synthesized from epichlorohydrin and dimethylvinylacetylenephenol. The reaction product, distilled at 168-169°C at 3.5 mm Hg and crystallized from alcohol, has a melting point of 42-48°C and contains 17% epoxy groups. The structure of the epoxy resin was confirmed by the IR spectrum. The epoxy resin was hardened using maleic anhydride (85% based on epoxy groups) and benzoyl peroxide (1% based on resin). The hardened resin exhibited a constant mechanical strength (12 kg/cm <sup>2</sup> at $\tau=10$ sec) in the 20-300°C interval and excellent adhesive properties (shear strength of the steel-steel joint was 120 kg/cm <sup>2</sup> and of the aluminum-aluminum joint was 79 kg/cm <sup>2</sup> ). Orig. art. has: 2 figures, 2 formulas.							
SUB CODE: 11/		SUBM DATE: none					
Card 1/1		hs					
				UDC: 678.643'42'5			

44/3

L 10798-63 EWT(1)/EWG(k)/EWT(m)/BDS/EEC(b)-2/ES(w)-2--AFFTC/ASD/  
~~ESD-3/AFWL/SSD--P1-4/PO-4/Pab-4/Pz-4--AT/IJP(G)/RR~~

85  
81

ACCESSION NR: AP3000566

S/0109/63/008/005/0834/0844

AUTHOR: Tsinman, I. M.

TITLE: Mechanism of <sup>21</sup>cathode spot excitation on a mercury pool cathode

SOURCE: Radiotekhnika i elektronika, v. 8, no. 5, 1963, 834-844

TOPIC TAGS: mercury pool cathode, cathode spot excitation, tungsten filament, high-density plasma

ABSTRACT: The process of excitation of a cathode spot on a mercury pool cathode during the closing of a circuit across the pool and the tungsten cathodes is investigated. Measurements were carried out in an experimental tube with a vacuum of  $1 \cdot 10^{-5}$  mm Hg. A tungsten filament with a diameter of  $200 \mu$  and a length of 8--9 mm was used as an ignitor. The closing of the circuit was accomplished by raising the mercury pool cathode by means of a special barometric device. The velocity of the rising mercury was 0.1 cm/sec. A relationship was observed between the exciting voltage and the temperature of the tungsten filament, the minimum temperature of which was in the region of 500--650C. With R equal to 0.05 ohm and C equal to 1000  $\mu$ f in the exciting

Card 1/32

L 10798-63

ACCESSION NR: AP3000566

4

network, the cathode spot occurs at a positive-polarity ignitor voltage of 0.5 v, and at a 0.7-v negative polarity voltage. During the closing of the circuit, the occurrence of positive as well as negative charged particles was noted between tungsten and mercury electrodes. At low excitation voltages (1--2 v), positive ions and electrons are present in approximately equal numbers. At an exciting voltage of 1 v, when the velocity of electrons is insufficient for the ionization of mercury-vapor atoms, the closing of the circuit is accompanied by a luminescence which cannot be explained by the autoelectronic theory of the mechanism of the cathode spot excitation. Measurements of electron as well as ion currents originating between electrodes showed that cathode spot excitation is the result of a heavy-density current passing through a point formed in the mercury by a strong electric field. Energy released at this point transforms the mercury into a high-density plasma, which is the necessary condition for the development of a cathode spot. "I am taking the opportunity to express thanks to L. A. Sen and A. V. Gorelik, who have shown an interest in the work and who have taken part in a discussion of the results, and also to V. L. Ust'yantsev, who rendered great assistance in the completion of the experimental part of the work." Orig. art. has: 12 figures and 1 formula.

Card 2/32

TSINMAN, L.I. (Moskva)

Examination system of grading as a method of encouraging work in  
the class. Mat. v shkole no.6:46-47 N-D '59 (MIRA 13:3)  
(Mathematics--Study and teaching)

TSINMAN, M.

USSR/ Miscellaneous - Publications

Card : 1/1 Pub. 123 - 18/19

Authors : Feoktistova, V, Ivanchikova, E. and Tsинman, M.

Title : Publications of the Acad. of Sc. Kaz. SSR for the years 1952-1953

Periodical : Vest. AN Kaz. SSR 12, 107 - 141, December 1953

Abstract : List of books and periodicals covering various scientific fields, published by the Academy of Sciences Kaz. SSR during the years 1952-1953.

Institution : Acad. of Sc. Kaz. SSR, Alma-Ata

Submitted : ...

OBLEUKHOVA, O.; DEVYATKINA, Ye.; TSINMAN, T.

Improving the quality of transmission oils. Avt.transp.  
40 no.12:18-20 D '62. (MIRA 15:12)  
(Motor vehicles—lubrication)



NIKONETS, I.F.; TSINMAN, Ye.Ya.; LIVSHITS, M.I. [deceased]

Improving working conditions in manufacturing "Chistotel" and "Meta-  
morfoza" cremes at the Lvov Perfume Factory. Gig. i san. 24 no.9:81  
S '59. (MIRA 13:1)

1. Iz L'vovskoy gorodskoy sanitarno-epidemiologicheskoy stantsii.  
(MERCURY--TOXICOLOGY) (COSMETICS INDUSTRY--HYGIENIC ASPECTS)

1 JUL 1971  
DEMESHEVA, G.A.; IVANCHIKOVA, E.I.; KRIVOSHAPKIN, M.A.; LEYCHIK, V.M.;  
OVSYANKINA, V.I.; FEKTISTOVA, V.P.; TSINMAN, M.Z.; BEKKULOVA, S.N.;  
SUBKHANBERDINA, K.Kh.; RUBAKOV, P.I., laureat Stalinskoy premii,  
spetsial'nyy redaktor; BALANINA, O.V., kandidat sel'skokhozyaystven-  
nykh nauk, spetsial'nyy redaktor; SAKHAROVA, V.M., spetsial'nyy  
redaktor; KOSENKO, V.V., spetsial'nyy redaktor; ZHIZNEVSKIY, F.V.,  
otvetstvennyy redaktor; BURLACHENKO, L.A., redaktor; ALFEROVA, P.V.,  
tekhnicheskiiy redaktor

[Experience of agricultural leaders of Kazakhstan; an annotated  
bibliography] Opyt peredovikov sel'skogo khoziaistva Kazakhskoi SSR;  
annotirovannyi ukazatel' literatury. Alma-Ata, 1955. 290 p. (MLRA 9:12)

1. Akademiya nauk Kazakhskoy SSR, Alma-Ata. TSentral'naya nauchnaya  
biblioteka. 2. TSentral'naya nauchnaya biblioteka Akademii nauk  
Kazakhskoi SSR. (for Demesheva; Ivanchikova, Krivoshapkin, Leychik,  
Ovsyankina, Fecktistova, Tsinman)  
(Bibliography--Kazakhstan--Agriculture)

TSINN, I.M.,  
VOZNFSENSKII, S.A., Trans. Inst. Pure Chem. Reagents (U.S.S.R)  
No. 16, 98-108 (1939)

BELEN'KIY, L.S., inzh.; TSINNE, R.Ya., inzh.; BEREZYUK, V.I.,  
red.

[Regulations for operating and testing protective means  
used in electrical systems] Pravila ispol'zovaniia i is-  
putaniia zashchitnykh sredstv, primeniamykh v elektro-  
ustanovkakh. Kiev, Tekhnika, 1965. 55 p.

(MIRA 18:9)

1. Russia (1923- U.S.S.R.) Tekhnicheskoye upravleniye po  
ekspluatatsii energosistem. 2. TSekh vysokovol'nogo oboru-  
dovaniya Gosudarstvennogo tresta po organizatsii i ratsio-  
nalizatsii rayonnykh elektrostantsiy i setey (for Belen'kiy,  
TSinne).

S/564/57/000/000/021/029  
D258/D307

AUTHORS: Rez, I. S., and Tsinober, L. I.

TITLE: The growing of single crystals of sorbitol hexaacetate (I)

SOURCE: Rost kristallov; doklady na Pervom soveshchanii po rostu kristallov, 1956 g. Moscow, Izd-vo AN SSSR, 1957, 287-293

TEXT: Sorbitol was acetylated with boiling acetic anhydride over 3 - 5 hrs at 135°C, excess acetic anhydride was distilled off in vacuum, the product was dissolved in hot 20% HOAc, filtered, crystallized from 40% EtOH, decolorized with 2% activated charcoal, and recrystallized. Presence of piezoelectric properties and goniometric measurements of four 0.5 - 1 mm crystals showed that the crystals belong to the dihedral axial class of the monoclinic syngony, with the monoclinic angle  $\beta \sim 96^\circ$ . X-ray analysis showed lattice parameters to be:

Card 1/2

The growing of...

S/564/57/000/000/021/029  
D258/D307

$a = 12.7_2^0 \text{ \AA}$ ;  $b = 8.4_3^0 \text{ \AA}$ ;  $c = 10.1_5^0 \text{ \AA}$ , with  $\sim 2$  molecules in the elementary cell. The symmetry group is  $P2_1$ . Solubilities of  $I$  in 96% EtOH range from 17.4 g/l at  $27.0^\circ\text{C}$  to 502 g/l at  $58.0^\circ\text{C}$ ; in 40% EtOH from 1.5 g/l at  $23^\circ\text{C}$  to 249 g/l at  $61^\circ\text{C}$ ; in water from 1.3 g/l at  $33^\circ\text{C}$  to 27.0 g/l at  $82^\circ\text{C}$ . Yields of crystallization are sensitive to admixtures (acids or alkalis). Monocrystals were grown from solutions in 96% EtOH, saturated at  $45 - 50^\circ\text{C}$  in all-glass apparatus in a thermostat accurate to  $\pm 0.10 - 0.15^\circ\text{C}$ . Difficulties were experienced with losses of solvent owing to its volatility. Use of sealed wide tubes with a narrow bottom outlet for the removal of parasitic crystals allowed the authors to grow up to 7 g single crystals. The method is industrially feasible, but the crystals are highly sensitive to any disturbance of temperature or other conditions during growth. There are 1 figure and 6 tables.

Card 2/2

L 36395-66

EWT(1)/EWT(m)/T/EWP(t)/ETI

IJP(c) GG/JD/WH

ACC NR: AP6018781

(A)

SOURCE CODE: UR/0070/66/011/003/0475/0476

AUTHOR: Nozdrina, V. G.; Tsinober, L. I.

ORG: none

TITLE: Spontaneous crystallization of corundum under hydrothermal conditions

SOURCE: KIRSTALLOGRAFIYA, v. 11, no. 3, 1966, 475-476

TOPIC TAGS: corundum, metal crystallization, crystal growth rate, crystal formation, radiation effect, thermoluminescence, gamma radiation

ABSTRACT: Spontaneous crystallization of corundum crystals was studied under various physical and chemical conditions. The form of the crystals was a function of solution composition (10 to 20%  $\text{Na}_2\text{CO}_3$  or 10%  $\text{NaHCO}_3$ ), autoclave temperature and pressure, and supercooling. Both platelets and isometrical crystals were formed from the  $\text{Na}_2\text{CO}_3$  solutions while prismatic shaped crystals were grown from  $\text{NaHCO}_3$  solutions. This was the result of the relative growth rates of habit planes in the respective solutions: in  $\text{Na}_2\text{CO}_3$  solutions  $V_{(0001)}/V_{(1120)} \leq 1$ , while in  $\text{NaHCO}_3$  solutions  $V_{(0001)}/V_{(1120)} > 1$ . These data were obtained under varying autoclave conditions of pressure, temperature and supercooling. The action of  $\text{Co}^{60}$  gamma radiation on these crystals was also studied. Under exposure to the radiation the isometric and prismatic crystals turned greenish-brown while the platelets acquired a greenish-yellow color. The optical spectra of

Card 1/2

UDC: 548.51

L 36395-66

ACC NR. AP6018781

the irradiated samples were measured before and after annealing at 400°C. Annealing lowered the absorption closer to its preirradiated state. Maxima were observed in the thermoluminescence curves (intensity as a function of temperature) for the differently colored samples at temperatures of 110, 150, 290 and 530°C. The ratio of intensities at 110 and 150°C were different: the greenish-brown specimens had lower maxima at 110°C and higher maxima at 150°C. The greenish-brown samples turned greenish-yellow when heated to 200°C; above 350°C, the color weakened and at 660°C the color faded in all samples. This explained the similar maxima observed for both types of samples at 530°C. Orig. art. has: 3 figures, 1 table.

SUB CODE: 07,20/

SUBM DATE: 14Jun65/

ORIG REF: 001

Card 2/2 MLP



ACCESSION NR: APh013749

S/0197/63/000/012/0049/0056

AUTHORS: Tsinobor, A.; Shtern, A.; Shcherbinin, E.

TITLE: On the separation of magnetohydrodynamic boundary layer

SOURCE: AN LatSSR. Izv., no. 12, 1963, 49-56

TOPIC TAGS: bismuth cylinder, transverse magnetic field, laminar boundary layer, Hartmann number, Stuart number

ABSTRACT: By means of tin and bismuth cylinders, coated with mercury, the effect of transverse magnetic field on the position of separation of the laminar boundary layer from the cylinder surface has been measured. The mercury channel width was 30 mm, and cylinder diameters ranged from 5 to 8.5 mm. The angles at which separation took place were measured for various Reynolds and Hartmann numbers. Data were correlated, using the Stuart number  $M^2/Re$ . The effect of cylinder conductivity on separation distance was also studied. For tin,  $\varphi/\varphi_0$  (separation angle ratio) was 1.75 at  $M^2/Re \sim 1$  and for bismuth, at  $M^2/Re \sim 1.7$ . The unsteady magnetohydrodynamic equations in two dimensions were solved iteratively

Card 1/2

ACCESSION NR: APL013749

for  $Re_m \ll 1$ , assuming no electric fields present and the separation criteria were obtained as

$$\left(\frac{M^2}{Re}\right)_{cr} \sim \frac{\rho V_0^2 L^2}{L \eta V_0 Re} = 1,$$

in good agreement with experiments. Orig. art. has: 23 formulas, 3 figures, and 1 table.

ASSOCIATION: Institut fiziki AN Latv. SSR (Institute of Physics AN Latv. SSR)

SUBMITTED: 08Aug63

DATE ACQ: 14Feb64

ENCL: 00

SUB CODE: PH

NO REF SOV: 005

OTHER: 001

Card 2/2

TSINOBER, A. [Cinobers, A.]; SHCHERBININ, E.

Jet flows of electrically conductive liquids. Izv. AN Latv. SSR  
no. 7: 57-66 '63. (MIRA 17:4)

1. Institut fiziki AN Latv SSR.

**"APPROVED FOR RELEASE: 03/14/2001**

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**CIA-RDP86-00513R001757110008-1**

**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757110008-1"**

LIYELAUSIS, O. [Lielausis, O.]; TSINOBER, A. [Cinobers, A.];  
SHTERN, A. [Sterns, A.]

Effect of a transverse magnetic field on the nature of the  
flow of liquid metal about bodies. Izv. AN Latv. SSR no.5:  
73-76 '63. (MIRA 17:1)

TSINOBER, A.; SHCHERBININ, E.

Effect of a magnetic field on the hydrodynamic trail behind  
a body. Izv. AN Latv. SSR no.10:61-66 '63. (MIRA 17:1)

1. Institut fiziki AN Latvyskoy SSR.

BRANOVER, G.[Branovers, G.] (Riga); DUKURE, R. (Riga); LIELAUSIS, O. (Riga);  
TSINOBER, A.[Cinobers, A.] (Riga)

On local hydraulic resistances in the flow of liquid metal in a  
transverse magnetic field. Vestis Latv ak no.11:97-102 '60.  
(EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut fiziki.

(Hydraulics) (Liquid metals) (Magnetic fields)



FILIPPOV, M.V., kand. tekhn. nauk, otv. red.; KIRKO, I.M., doktor fiz.-mat. nauk, red.; BIRZVALK, Yu.A. [Birzvalks, J.], kand. tekhn. nauk, red.; LIYELAUSIS, O.A. [Lielausis, O.], kand. fiz.-mat. nauk, red.; TSINOBER, A.B. [Cinobers, A.], red.; UKERMARKA, R.P., red.; SAVEL'YEVA, Ye., red.; TEYTEL'BAUM, A., red.; LEMBERGA, A., tekhn. red.

[Reports delivered at the Third Conference on Theoretical and Applied Magnetohydrodynamics in Riga, July 2-7, 1960]  
Doklady, pročitannye na... Riga, Izd-vo AN Latviiskoi SSR.  
Sec.3. [Problems in magnetohydrodynamics] Voprosy magnitnoi gidrodinamiki. 1963. 408 p. (MIRA 17:4)

1. Soveshchaniye po teoreticheskoy i prikladnoy magnitnoy gidrodinamike. 3d, Riga, 1962. 2. Chlen-korrespondent AN Latviyskoy SSR (for Kirko).

ACC NR: AP6024848

(N)

SOURCE CODE: UR/0371/66/000/002/0010/0015

AUTHOR: Tsinober, A. B. -- Cinobers, A.; Shcherbinin, E. V. -- Scerbinins, E.

ORG: Institute of Physics, AN LatSSR (Institut fiziki AN LatSSR)

TITLE: Some problems of the magnetohydrodynamic boundary layer

SOURCE: AN LatSSR. Izvestiya. Seriya fizicheskikh i tekhnicheskikh nauk, no.2, 1966, 10-15

TOPIC TAGS: magnetohydrodynamics, boundary layer theory, MHD, MHD boundary layer theory, MHD magnetic field linearization

ABSTRACT: For some flows of a conducting fluid in a longitudinal magnetic field it becomes expedient to effect a linearization of the MHD equations on the magnetic field, conserving for the velocity field all the assumptions of conventional hydrodynamics. On this basis, axially-symmetric and plane jet flows of a conducting fluid in a longitudinal and/or coplanar field, as well as non-stationary flows around bodies in a magnetic field orthogonal to the surface are considered. Attention is also directed to a partial analogy of the method to the non-inductive approximation approach (in the sense of ordinary boundary layer theory; Abstractor), often used in problems with a transverse magnetic field.

SUB CODE: 20/

SUBM DATE: 20Apr65/

ORIG REF: 002/

OTH REF: 001

Card 1/1

TSINOBER, A.B.; SHCHERBININ, F.V.

Two-dimensional magnetohydrodynamic jets. *Mag. pldr.* no.3:21-29

'65.

(MIRA 18:30)

ACCESSION NR: AT4042281

S/0000/63/003/000/0049/0058

AUTHOR: Tsinober, A. B.

TITLE: The effects of a magnetic field on flow around bodies

SOURCE: Soveshchaniye po teoreticheskoy i prikladnoy magnitnoy gidrodinamike. 3d, Riga, 1962. Voprosy\* magnitnoy gidrodinamiki (Problems in magnetic hydrodynamics); doklady\* soveshchaniya, v. 3. Riga, Izd-vo AN LatSSR, 1963, 49-58

TOPIC TAGS: laminar flow, transverse magnetic field, plate drag coefficient, sphere drag coefficient, boundary layer detachment, vortex detachment frequency, surface detachment line, wake structure, irrotational flow, cylinder drag coefficient, drag coefficient, hydromagnetics

ABSTRACT: Dependence of drag coefficients on the parameter  $M/\sqrt{Re}$  was measured for shellac-insulated brass foil plates ( $Re=7000 - 50,000$ ;  $M=0-300$ ), cylinders of W or Mo ( $Re=100 - 6000$ ;  $M=0 - 40$ ) and gold spheres insulated with an epoxy glue ( $Re=3000 - 10,000$ ;  $M=0-53$ ), when placed in a circular channel parallel to an onrushing flow in a transverse magnetic field. Locations of the boundary layer detachment line were determined for tin cylinders submerged at a depth of 55 mm in a flow of Hg ( $Re=1000 - 6000$ ;  $M=0 - 37$ ; transverse field) and for spheres ( $Re=220-12,400$ ;  $M=0-88$ ). The frequency of vortex detachment

Card 1/2

ACCESSION NR: AT4042281

was measured for tungsten cylinders ( $1=50$ ;  $Re=1650-3160$ ;  $M=1-17.5$ ). The results indicate that the field exerts an appreciable effect on drag at  $M^2/Re$  values on the order of  $10^{-2}$ . The field displaces points of boundary layer detachment downward in the flow, and distorts detachment lines on the surfaces of spheres. Its effect on the structure of wakes behind an object is indicated by the fadeout of laminar to turbulent diffusion boundary at sufficiently high  $M^2/Re$ . The vortex detachment frequency increased as Stewart's number increased and the flow became irrotational at  $M^2/Re > 2$ . Orig. art. has: 9 figures and 5 formulas.

ASSOCIATION: none

SUBMITTED: 04Dec63

ENCL: 00

SUB CODE: ME

NO REF SOV: 005

OTHER: 005

Card 2/2

L 11156-67 EWP(m)/EWT(1)/EWT(m)/EWP(w) IJP(c) EM/DJ  
ACC NR: AP6034575

SOURCE CODE: UR/0382/66/000/003/0003/0021

AUTHOR: Branover, G. G. ; Gel'fgat, Yu. M. ; Tsinober, A. B. 75

ORG: none

TITLE: Turbulent magnetohydrodynamic flows in prismatic and cylindrical tubes

SOURCE: Magnitnaya gidrodinamika, no. 3, 1966, 3-21

TOPIC TAGS: turbulent flow, MHD flow, transverse magnetic field, drag coefficient, stress distribution

ABSTRACT: The authors review the present state of experimental and semi-empirical investigations of turbulent MHD flows in prismatic and cylindrical tubes. Experimental investigations of flow in a tube with a slit-like cross section placed lengthwise in the direction of the transverse magnetic field as well as a semi-empirical analysis of two-dimensional flows in the transverse field are discussed. For these two-dimensional flows several variants of the semiempirical theory are proposed for reference functions permitting the calculation of the drag coefficient, the average speed curve and the distribution of stress of the turbulent friction. <sup>1/2</sup> Orig. art. has: 5 figures and 21 formulas. [Based on authors' abstract]

SUB CODE: 20/SUBM DATE: 22Apr66/ORIG REF: 032/OTH REF: 052/

Card 1/1 m/c

UDC: 538.4

TSINOBER, A.B. [Cinobers, A.]; SHTERN, A.G. [Sterns, A.]; SHCHERBININ, E.V.

Effect of the Re number on the location of the separation point  
of the boundary layer. Inzh.-fiz. zhur. 8 no.1:121-123 Ja '65.  
(MIRA 18:3)

1. Institut fiziki AN Latviyskoy SSR, Riga.

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... .. of dead in the

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757110008-1"



ASSOCIATION: None

SUBMITTED: 11Aug64

ENCL: UU

SUB CODE: RB, RT

KALISMAN, S.; LASHIN, A. A.; et al.; et al.; et al.

"Conductive fluid flow past bodies in a transverse magnetic field"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

magnetic field is applied the magnetization of the cylinder in-

SUB CODE: ME

ENCL: 00

Card 2/2

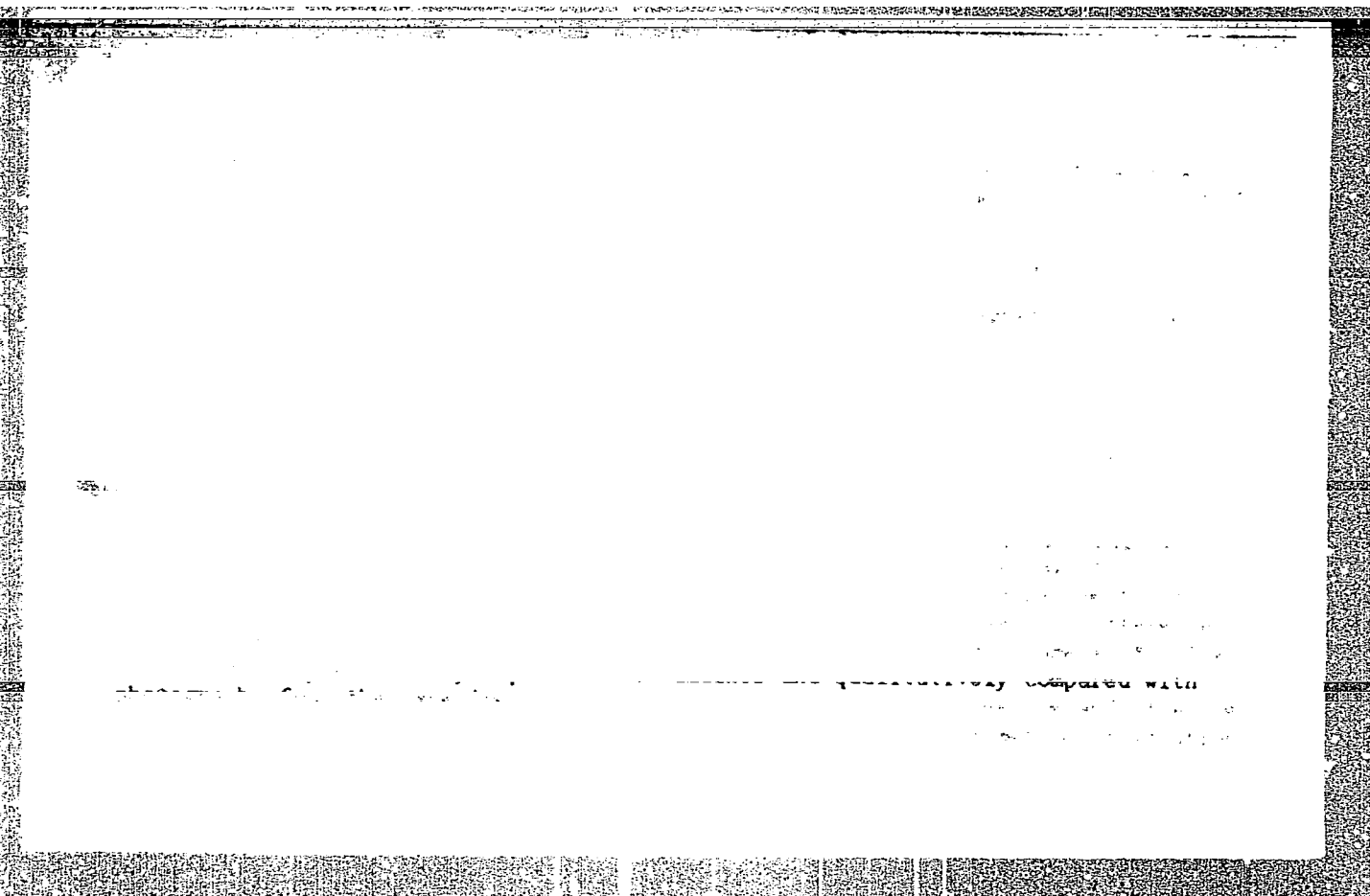
AUTHOR: Tsing, Ben, A. S.; 1986-11-11; 11-11-11

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**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757110008-1"**

ACC NR: AP5024895

UR/0382/65/000/003/0021/0029

AUTHOR: Tsinober, A.B.; Shcherbinin, E.V.

12

ORG.: None

3

TITLE: Flat magnetohydrodynamic jets

SOURCE: Magnitnaya gidrodinamika, no.3, 1965, 21-29

TOPIC TAGS: magnetohydrodynamic theory, flat magnetohydrodynamic jets

ABSTRACT: General solutions are obtained for three magnetohydrodynamic problems involving two-dimensional (x,y) jets of conductive fluids in a transverse (along z-axis) magnetic field, which can be an arbitrary, not necessarily polynomial function of the downstream coordinate x. In all cases it is assumed that the induced magnetic field can be neglected, i.e.  $Re_m \ll 1$ . Considering now the first case, that of an immersed infinite jet of conductive fluid, the additional assumption of zero currents outside the mixing zone leads to a system of equations (1) and (2), with the initial condition (3) and an additional initial condition developed by integrating (1) across the jet section:

$$u \frac{\partial u}{\partial x} + v \frac{\partial u}{\partial y} = \nu \frac{\partial^2 u}{\partial y^2} - \frac{\sigma \beta^2}{f} u \quad (1) \quad \frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} = 0 \quad (2)$$

$$v = \frac{\partial u}{\partial y} = 0 \text{ for } y=0, \quad u \rightarrow 0 \text{ for } y \rightarrow \pm \infty$$

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UDC: 538.4

ACC NR: 5024895

The notations are conventional, with  $B=B(x)$  - magnetic field strength,  $\sigma$  - electrical conductivity, etc. The solution is obtained with the aid of the self-modeling approach introducing, e.g., the flow function  $\psi$ , in the form of  $\psi = A.f(\eta).x/\delta$ ;  $\eta = B.y/\delta$  with  $A$  and  $B$  - temporary constants,  $\delta=\delta(x)$  - jet width, to be determined by further considerations. The expression obtained for  $\delta(x)$ , (11), in conjunction with that \*) found for  $I_0$  appearing in the denominator of  $\delta(x)$ , shows that for a given certain magnitude of field strength, there exists a point on the jet axis where the jet is washed out "sidewise" completely. The solution also shows the feasibility of controlling the jet shape (jet width) by prescribing a suitable magnetic field variation along the  $x$  - axis. For example, to obtain jet widening according to  $\delta=kx^m$ , it is necessary to impose a magnetic field:  $B = B_0/x^m$ , with the limiting condition of  $m \gg 2/3$ . The case of  $m = 2/3$  corresponds to  $B=0$ , and  $I_0 = \text{const.}$ , i.e., to a common hydrodynamic jet. Analogous considerations are applied in the case of a turbulent infinite conductive jet in a transverse magnetic field, and finally in the case of a radial-slit type laminar jet. The latter can have in the general case all three velocity components (twisted jets). This problem is formulated in cylindrical coordinates. Certain limitations of solutions found are discussed. Orig. art. has: 22 formulas.

$$\delta = \frac{Dx^{2/3}}{\sqrt{1 - DN(4.5vp^2/I_0^2)Bx^{1/3}}} \quad (11)$$

$$\rho A^2 B \lim_{x \rightarrow 0} \frac{x^2}{\delta^3} = I_0 \quad *)$$

SUB CODE: 20 SUBM DATE: 02Feb65

ORIG REF: 001 OTHER REF: 001

Card 2/2

L 16049-66 EWT(m)/EWP(t) JD/WW/JG

ACC NR: AP5027376

SOURCE CODE: UR/0371/65/000/005/0003/0014

AUTHOR: Branover, G. G. -- Branovers, G.; Liyelausis, O. A. -- Lielausis, O.;  
Tsinober, A. B. -- Cinobers, A.; Shekhter, Ye Yu. -- Sehters, J. 64

ORG: Physics Institute, AN Latv.SSR. (Institut fiziki AN Latv.SSR) B

TITLE: Hydraulic theory of electromagnetic batcher

SOURCE: AN LatSSR. Izvestiya. Seriya fizicheskikh i tekhnicheskikh nauk,  
no. 5, 1965, 3-14

TOPIC TAGS: hydrodynamics, metal casting, electromagnetic effect, liquid metal,  
differential equation 6

ABSTRACT: The problem of liquid metal dosing occurs in connection with  
automatization of casting processes. The author suggests some new methods of  
batching based on mechanical displacement and pneumatic and electromagnetic effects

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L 16049-66

ACC NR: AP5027376

on metals. His methods are based on some known results in the hydrodynamics of an electromagnetic batcher. The author shows that nonstationary processes in the batcher can be satisfactorily described by means of differential equations corresponding to the various stages which comprise the entire cycle of dosing. These differential equations are solved stage by stage. If formulas of hydraulic duct-flow are used for expressing energy losses then the solutions of the corresponding differential equation can be carried to completion. These solutions are obtained within an approximation yielding the dependence  $\theta = \theta(N)$  where is the time during which the N-th numbered dose is supplied by the pump of the batcher. Orig. art. has: 8 figures, 1 table and 20 formulas.

SUB CODE: 13, 12/ SUBM DATE: 02Apr65/ ORIG REF: 011

FW  
Card 2/2

S/070/63/008/002/013/017  
E021/E120

AUTHORS: Tsinober L.I., and Chentsova L.G.

TITLE: The nature of the smoky color in crystals of synthetic quartz

PERIODICAL: Kristallografiya, v.8, no.2, 1963, 280-283

TEXT: Some experiments were first carried out on natural quartz. No marked displacement of the absorption maxima in the visible region was observed when sodium ions were substituted for lithium. Attempts to introduce potassium ions were unsuccessful. Attention was then turned to synthetic quartz grown from solutions of sodium or potassium carbonate and therefore containing only sodium or potassium ions. The crystals were grown in an autoclave and exposed to X-radiation in a ТРЦ -3 (TRTs-3) apparatus with a tungsten anticathode at 200 mA and 80 kV. None of the crystals grown from potash was noticeably colored. When sodium or potassium carbonate containing an impurity of germanium was used, however, a different result was obtained. Absorption spectra were measured in the region 220 - 1100 mμ. In these samples, the maxima at 460 and 625 mμ were less sharply defined than usual and

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The nature of the smoky color in ...

S/070/63/008/002/013/017  
E021/E120

there was a maximum at 285 mμ resulting from the impurity germanium. Evidently the isomorphous impurity germanium, as it were, "loosens" the structure of quartz so that it is possible to introduce the large potassium ions (in comparison with sodium) into quartz and therefore to form potential centers of smoky color.

There are 2 figures.

ASSOCIATION: Institut kristallografii AN SSSR  
(Institute of Crystallography, AS USSR)

SUBMITTED: September 3, 1962

Card 2/2





**"APPROVED FOR RELEASE: 03/14/2001**

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**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757110008-1"**

L 9437-66 EWT(m)/EWP(b)/EWP(e)/EWP(t) LJP(c) JD/WH

ACC NR: AP6000533

SOURCE CODE: UR/0070/65/010/006/0879/0883

AUTHOR: Tsinober, L. I.; Samoylovich, M. I.; Gordiyenko, L. A.

ORG: none

TITLE: Certain properties of smoke-tinting in aluminum- and germanium-doped quartz crystals

SOURCE: Kristallografiya, v. 10, no. 6, 1965, 879-883

TOPIC TAGS: quartz, aluminum, germanium, smoked quartz, color center, quartz crystal, crystal growing

ABSTRACT: Certain special properties of smoked color centers in aluminum- and germanium-doped synthetic quartz crystals irradiated with ionizing radiation are discussed on the basis of a system for the interaction between the centers of two dopants proposed elsewhere (A. Halperin, J. E. Ralph, J. Chem. Phys., 39, 1, 63-73, 1963; J. H. Mackey, J. Chem. Phys. 39, 1, 74-83, 1963). The center conversion model shown in Fig. 1 was used in the study. The experimental results, which confirmed the assumptions of Halperin, Ralph, and Mackey, indicate the following. 1) If the crystals are grown from a natural "mixture" (i.e., aluminum-containing quartz), the introduction of a germanium impurity into the matrix ensures the formation of a sufficiently high concentration of potential (smoke) color centers in the germanium-absorbing aluminum pyramids <r> and <R>. 2) Contrary to results

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UDC: 548.5:535.32

L 9437-66

ACC NR: AP6000533

obtained elsewhere (A. J. Cohen, E. S. Hodge, J. Phys. Chem. Solids, 7, 4, 1958), the pyramids of pinacoid edges <c> in germanium-doped crystals remained uncolored

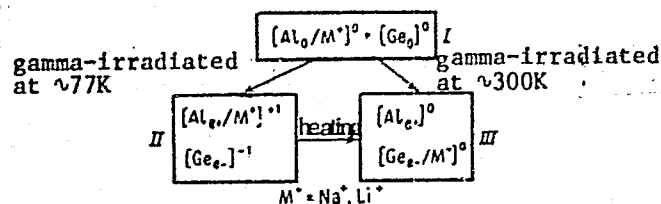


Fig. 1. Color center conversion model

or were colored only slightly, as is the case with quartz crystals grown without the germanium impurity. The absorption of the germanium by the edge c has essentially no effect on the capture coefficient for aluminum and remains very low for conventional quartz crystals. 3) Paramagnetic centers, which are not connected with the alkali metal ions and are stable only at low temperatures, form, along with stable Ge-centers, in irradiated Ge-doped quartz, thus confirming earlier assumptions (A. I. Novozhilov, M. I. Samoylovich, L. I. Tsinober, Zh. structur. khimii, 5, 4, 630, 1964). At room temperature an unstable absorption band formed in the c-crystal around 290 millimicrons and the unstable Ge-centers decayed within a 4-day period. These bands were not observed in previous measurements (L. I. Tsinober, Trudy II All-Union Conference on Radiation Chemistry. Izd-vo AN SSSR,

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55

T 9437-66

ACC NR: AP6000533

677-682, 1962) because of the prolonged period between irradiation and observation. 4) (Smoke) color-centers in Ge-doped crystals are formed at smaller doses than is the case in crystals without germanium, and their density, measured in the saturation region, is approximately proportional to the amount of aluminum impurities in a crystal and is totally independent of the concentration of Ge. 5) The accepted color-center model was checked by using the capacity of the quartz to free itself from the aluminum impurity during the edge growth. A series of experiments carried out for the purpose of growing high-purity quartz involved the use of <c>-crystal pyramids of synthetic aluminum-free quartz as the "mixture." The experimentally synthesized crystals, irradiated by  $4 \times 10^7$  roentgens, were compared with crystals grown on the natural "mixture" and irradiated by  $5 \times 10^6$  roentgens. The results confirmed the accuracy of the existing ideas about the relationship between smoke color centers and aluminum impurities. Orig. art. has: 4 figures.

[YK]

SUB CODE: 20/ SUBM DATE: 02Jun65/ ORIG REF: 003/ OTH REF: 006/ ATD PRESS:

4154

jw

Card 3/3

MELANKHOLIN, N.M.; TSINOBER, L.I.

Nature of the biaxiality of synthetic amethyst crystals.  
Kristallografiia 8 no.1:110-112 Ja-F'63 (MIRA 17:7)

1. Institut kristallografi AN SSSR.

TSINOBER, L.I.; CHENTSOVA, L.G.

Nature of the smoky coloring in synthetic quartz crystals.  
Kristallografiia 8 no.2:280-283 Mr-Apr '63. (MIRA 17:8)

1. Institut kristallografi AN SSSR.



NOVOZHILOV, A.I.; SAMOYLOVICH, M.I.; TSINOBER, L.I.

Short-living paramagnetic centers in a quartz with germanium admixture. Zhur. strukt. khim. 5 no.4:630-631 Ag '64.

(MIRA 18:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteza mineral'nogo syr'ya.

S/844/62/000/000/117/129  
D207/D307

AUTHOR: Tsinober, L. I.

TITLE: Some features of the smoky and amethyst coloring of synthetic quartz crystals

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 677-682

TEXT: The absorption spectra and colors of x ray irradiated synthetic quartz crystals were investigated. Quartz was grown by the hydrothermal method and irradiation was carried out using a TPL-3 (TRTs-3) tube with a W anode (80 kv, 20 ma). Visual inspection showed that the growth pyramids of different faces acquired different colors after irradiation:  $D_{\langle 10\bar{1}1 \rangle} > D_{\langle 01\bar{1}1 \rangle} \gg D_{\langle 0001 \rangle}$ , where  $D$  is the absorption coefficient at one of the smoky-color maxima (465 mμ) at saturation, and  $\langle 10\bar{1}1 \rangle$ ,  $\langle 01\bar{1}1 \rangle$ ,  $\langle 0001 \rangle$  denote respectively the growth of a positive rhombohedron, a negative rhombohedron and a pinacoid. Under certain growth conditions the pyramids

Card 1/3

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Some features of ...

S/844/62/000/000/117/129  
D207/D307

$\langle 0001 \rangle$  were not colored at all, even by strong doses of x rays. The color centers responsible for the smoky color were of impurity type:  $\text{Si}^{4+}$  replaced by  $\text{Al}^{3+}$  and the excess charge compensated by  $\text{Li}^+$  or  $\text{Na}^+$ . Spectrochemical analysis confirmed this conclusion: the uncolored  $\langle 0001 \rangle$  pyramids had the lowest Al content. In germanium-doped synthetic quartz the germanium occurred in all three types of growth pyramids, but no absorption maximum due to Ge (285 m $\mu$ ) appeared in the spectra of the  $\langle 0001 \rangle$  pyramids. This indicated a close relationship between the Ge maximum and the smoky color maxima at 465 and 650 m $\mu$ , which were also absent in the spectra of  $\langle 0001 \rangle$  pyramids. Germanium-doped quartz acquired its smoky color at lower x ray doses than did the quartz with Al impurity, but the intensity of this color was weaker (for the same dose). Iron-doped quartz (grown from aqueous solutions using seeds oriented parallel to the positive-rhombohedral plane) became violet ('amethyst') after x ray irradiation, the color being due to the Fe impurity. These 'amethyst' crystals were identical in their absorption spectra with natural amethyst. Acknowledgments are made to L. G. Chen-

Card 2/3

Some features of ...

S/844/62/000/000/117/129  
D207/D307

tsova and N. A. Bakh for discussion of the results, A. A. Revina for checking the crystals using an EPR apparatus, and N. N. Semenov for carrying out spectrochemical analyses. There are 8 figures and 2 tables.

ASSOCIATION: Institut p'ezoopticheskogo i mineral'nogo syr'ya (Institute of Piezo-Optical and Mineral Raw Materials)

Card 3/3

STARODUBTSEV, S.V.; VAKHIDOV, Sh.; TSINOBER, L.I.

Sectorial distribution of luminescence centers in synthetic quartz.  
Kristallografiia 8 no.5:770-773 S-O '63. (MIRA 16:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut p'yezoopticheskogo  
mineral'nogo syr'ya AN UzSSR.

S/070/63/008/001/019/024  
E132/E460

AUTHORS: Melankholin, N.M., Tsinober, L.I.

TITLE: The nature of biaxial crystals of synthetic amethyst

PERIODICAL: Kristallografiya, v.8, no.1, 1963, 110-112

TEXT: It has long been known that amethyst is optically biaxial, whereas quartz is uniaxial. Synthetic amethyst was made from crystals of synthetic quartz by X-ray irradiation and this was biaxial and contained Brazil twins. Plates of this material cut parallel and perpendicular to the Z-axis were examined. Most of the plates were cut from a right handed individual and in them a large number of very small left handed regions could be seen, in the form of triangular platelets, near the twin boundaries. The biaxial properties are only observed near to the twin boundaries. The angle between the optic axes varies from 0 to 7°; the optic orientation also varies and is not fixed to that of the twin boundary. It was shown that the left handed individuals in a right handed matrix do not have exactly the same orientation as the matrix differing usually by 0.7 to 0.8° and sometimes by as much as 1.2°. An explanation of the biaxial optics is given on the above basis. It can be supposed that the Brazil twins form

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The nature of biaxial ...

S/070/63/008/001/019/024  
E132/E460

a system like a Fresnel prism and separate the right and left handed circularly polarized rays which pass along the optic axis. This is possible only on the plane perpendicular to the twin boundaries and so this explanation must be rejected. Internal strains are also rejected. A third explanation is on the basis of the difference in orientation between the left and right handed components but  $1^\circ$  disorientation is insufficient to account for the angle of  $7^\circ$  between the optic axes. The matter is not satisfactorily concluded. There is 1 figure. ✓

ASSOCIATION: Institut kristallografii AN SSSR  
(Institute of Crystallography AS USSR)

SUBMITTED: June 25, 1962

Card 2/2

L 26742-66 EWP(e)/EWT(m) WE

ACC NR: AF6011467

SOURCE CODE: UR/0070/66/011/002/0236/0244

AUTHOR: Chentsova, L. G.; Tsinober, L. I.; Samoylovich, M. I.ORG: Institute of Crystallography, AN SSSR (Institut kristallografi AN SSSR)TITLE: Investigation of quartz with amethyst color

SOURCE: Kristallografiya, v. 11, no. 2, 1966, 236-244

TOPIC TAGS: quartz, color center, optic property, electron paramagnetic resonance, crystal lattice defect, heat effect

ABSTRACT: To obtain more information on the nature of the amethyst coloring of quartz, the authors investigated the morphology and certain optical and paramagnetic properties of artificial quartz with amethyst color. In addition, the EPR spectra of both synthetic and natural amethyst were determined. The crystal growth procedure was described in an earlier paper (Kristallografiya, v. 4, No. 4, 633-635, 1959). The amethyst coloring was produced by bombarding the synthetic crystals with x-rays from a TRTs-3 tube at 1500 r/sec. The coloring was usually complete after 20 minutes of exposure. The effect of heating the sample to different temperatures (390, 450, 510C) was tested and it was found that the defects causing the amethyst color centers change at temperatures above 500C. The role of different chemical elements entering in the crystal and their influence on the coloring is discussed. The results point to the conclusion that the amethyst color centers are probably  $Fe^{3+}$  ions replacing the  $Si^{4+}$  ions in conjunction with various lattice defects, particularly alkaline-metal

Card 1/2

UDC: 548.0: 535.66



L 26742-66

ACC NR: AF6011467

ions in the interstices. Other possible interpretations of the cause of the coloring are briefly mentioned. The authors thank A. I. Kovozhilov for help with the measurements of the EPR spectra. Orig. art. has: 5 figures, 1 formula, and 1 table.

SUB CODE: 20/ SUBM DATE: 03Feb65/ ORIG REF: 007/ OTH REF: 021

Card 2/2 fv

YAGLOVSKIY, V.I.; TSINSKAYA, Ye.K. (Moskva)

Design principles of the basic types of protective clothing.  
Shvein. prom. no.3:30-33 My-Je '63. (MIRA 16:8)

DZHIBLADZE, N.V.; TSINTSADZE, N.A.

Blood and bone marrow picture of the rabbit under normal conditions.  
Soob. AN Gruz. SSR 27 no.4:487-490 0 '61. (MIRA 15:1)

1. AN Gruzinskoy SSR, Institut eksperimental'noy i klinicheskoy  
khirurgii i gematologii, Tbilisi. Predstavleno akademikom  
K.D. Eristavi.

(MARROW)

(BLOOD)

NAZAREVSKIY, S.I., kand.sel'skokhoz.nauk; BLAGOVIDOVA, M.S.; ZAYTSEVA, Ye.N.; KRASNOVA, N.S., kand.sel'skokhoz.nauk; LIPINSKAYA, Ye.V.; LIPSKAYA, T.V. [deceased]; SHARONOV, V.A., kand.biolog.nauk; FILATOVA, Ye.P.; TSITSIN, N.V., akademik, otv.red.; OGOLEVETS, G.S., starshiy nauchnyy sotrudnik, red.isd-va; YEGOROVA, N.F., tekhn.red.

[Ornamental perennials; brief results of introduction at the Main Botanical Garden of the Academy of Sciences of the U.S.S.R.]  
Dekorativnye mnogoletniki; kratkie itogi introduktsii v Glavnom botanicheskom sadu Akademii nauk SSSR, 1960. 333 p.

(MIRA 13:7)  
1. Moscow. Glavnyy botanicheskiy sad. 2. Otdel tsvetovodstva Glavnogo botanicheskogo sada AN SSSR (for all, except TSitsin, Yegorova).

(Plants, Ornamental) (Moscow--Plant introduction)

TSITSIN, N.V., akademik

Remote hybridization. Priroda no.6:7-14 Je '60.

(Hybridization)

(MIRA 13:6)

TSINOBER, L.I.; KAMENTSEV, I.Ye.

Effect of the rate of growth on the concentration of smoke-colored centers and on the parameters of the elementary cell in synthetic quartz crystals. Kristallografiia 9 no.3:448-450 My-Je '64. (MIRA 17:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteza mineral'nogo syr'ya i Leningradskiy gosudarstvennyy institut im. A.A. Zhdanova.

ACCESSION NR: AP4039413

S/0070/64/009/003/0448/0450

AUTHORS: Tsinobar, L. I.; Kamentsev, I. Ye.

TITLE: The effect of growth rate on concentration of smoky color centers and on the parameters of the unit cell of synthetic quartz crystals

SOURCE: Kristallografiya, v. 9, no. 3, 1964, 448-450

TOPIC TAGS: color center, unit cell, synthetic quartz, cell parameter, crystal growth

ABSTRACT: The concentration of some impurities increases with increase in saturation and growth rate; the concentration of others declines. The authors call the first type of impurity nonstructural. It includes foreign particles, both macroscopic and microscopic (embracing colloidal particles), and gaseous and liquid inclusions. The second type, called structural impurity, may form by isomorphous growth in the crystal. Experimental data show that the parameter  $a$  increases with increase in growth rate, whereas  $c$  decreases. The value of the latter may be expressed by  $c = \frac{0.000024}{v} + 5.39324$ , where  $v$  is the rate of growth in mm/day. It

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ACCESSION NR: AP4039413

was found also that with decrease in rate of growth of the principal rhombohedral face in quartz the amount of Al as a structural impurity in the crystal lattice increases, and this leads to an increase in intensity of smoky coloration. Orig. art. has: 2 figures.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteza mineral'nogo syr'ya (All-Union Scientific Research Institute for the Synthesis of Mineral Raw Materials); Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University)

SUBMITTED: 03Oct63

ENCL: 00

SUB CODE: SS

NO REF SOV: 006

OTHER: 002

Card 2/2



TSINOB, L. I.

24 (2) PAGE 1 BOOK INTRODUCTION 807/2353

Abstracts from USSR Scientific Bibliography

Book Introduction, Vol. 2 (Growth of Crystals, Vol. 2) Moscow, 1979. 326 p. Includes bibliography. 2,000 copies printed.

Book, Ed. A. V. Shubnikov, Academician, and E. S. Shubnikov, Doctor of Geological and Mineralogical Sciences. Ed. of Publishing House: E. S. Shubnikov. Book. Ed. A. V. Shubnikov.

INTRODUCTION: This book is intended for scientists and researchers engaged in crystallography and in growing industrial monocry-

STALS: This is the second of two volumes on crystal growth. The first volume contained reports delivered at the First Congress on Crystal Growth.

The present volume also contains an extensive study of various crystals by A. V. Shubnikov (Moscow). The book is intended for scientists and researchers engaged in crystallography and in growing industrial monocry-

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BELEN'KIY, L.S., inzh.; TSINNE, R.Ya., inzh.; CHERNEV, K.K., red.;  
SHIROKOVA, M.M., tekhn. red.

[Regulations governing the use and testing of the protection  
devices of electric power systems] Pravila pol'zovania i is-  
pytaniia zashchitnykh sredstv, primenyaemykh v elektrousta-  
novkakh. Izd.2., perer. Moskva, Gosenergoizdat, 1962. 54 p.  
(MIRA 15:9)

1. Russia (1923- U.S.S.R.) Glavnoye energeticheskoye upravle-  
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tresta po organizatsii i ratsionalizatsii elektrostantsiy (for  
Belen'kiy, TSinne).

(Electric power distribution—Safety regulations)

TSINOBER, L.I.

One characteristic of the pleochroism of colored synthetic quartz. Kristallografiia 7 no.1:138-139 Ja-F '62. (MIRA 15:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut p'yezoop-ticheskogo mineral'nogo syr'ya.  
(Quartz--Optical properties)

TSINOBER, L.I.

Distribution of smoky color in X-irradiated crystals of synthetic  
quartz. Trudy VNIIP [MS] 3 no.2:95-103 '60. (MIRA 14'4)  
(Quartz) (X rays—Industrial application)

S/052/62/000/002/041/053  
AC01/A101

AUTHOR: Tsinober, L. I.

TITLE: Distribution of smoky tint in synthetic quartz crystals irradiated by X-rays

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1962, 48, abstract 2E434 ("Tr. Vses. n.-i. in-ta P'yezooptich. mineral'n. syr'ya", 1960, v. 3, no. 2, 95-103)

TEXT: When synthetic quartz is irradiated by X-rays, sectorial and zonal distribution of impurities is distinctly revealed; smoky tint appears due to defects originating according to the scheme:  $[Si^{4+}] \rightarrow [Al^{3+}] X^{1+}$ , where  $X^{1+}$  is penetrated ion of an alkali metal. Distribution of smoky tint intensity over growth pyramids is characterized by the inequality:  $D_{<R>} > D_{<r>} \gg D_{<c>}$ , where R, r and c are growth pyramids of positive rhombohedron, negative rhombohedron and pinacoid. Intensity of origination of potential tint centers is inversely proportional to normal growth speed of the corresponding zone. Quartz crystals with various Ge content were also grown. When such specimens are

Card 1/2

Distribution of smoky tint ...

S/058/62/000/002/041/053  
A001/A101

irradiated by X-rays, pyramids  $\langle R \rangle$  and  $\langle r \rangle$  are colored in smoky tint of considerably greater intensity than in crystals without Ge.

I. Svetlov

✓  
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[Abstracter's note: Complete translation]

Card 2/2

AUTHORS: Tsinober, L.I. and Chentsova, L.G. SOV/70-4-4-34/34

TITLE: Synthetic Quartz with Amethyst Coloration

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 4, pp 633-635 (USSR)

ABSTRACT: It has earlier been shown that synthetic quartz, grown from  $K_2CO_3$  solution can be coloured green or brown by  $Fe^{2+}$  and  $Fe^{3+}$  ions. This may happen by corrosion of the steel container used. All  $Fe^{2+}$  ions are sited in the crystal as colloidal impurities and give the green colour. The brown of the  $Fe^{3+}$  ions is somewhat dichroic and therefore structural. Various faces are coloured differently. The rhombohedra  $\langle R \rangle$  and  $\langle r \rangle$  readily take on a smoky colour under the action of X-rays. The influence of radiation on crystals grown from  $K_2CO_3$  solution with considerable iron was studied. Polished plates, cut parallel to  $11\bar{2}0$  were irradiated with a TRTs-3 tube (W-anode, 80 kV, 200 mA) for 30-60 min,  $(1.35 - 2.7 \times 10^6 \text{ rads})$ . The positive rhombohedral faces were coloured amethyst; the pyramidal faces of the negative

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Synthetic Quartz with Amethyst Coloration <sup>SOV/70-4-4-54/34</sup>

rhombohedron became smoky with a violet tinge but the brown and green of the pyramid of growth of the pinacoid  $\langle c \rangle$  were unaffected. Absorption spectra were recorded and spectral analysis gave the iron content material from each growth pyramid as follows:

$\langle R \rangle$	0.0040% $Fe_2O_3$	Amethyst after irradiation
$\langle r \rangle$	0.0047% $Fe_2O_3$	Mixed amethyst and smoky after irradiation
$\langle c \rangle$	0.0080% $Fe_2O_3$	Brown
$\langle c \rangle$	0.025% $Fe_2O_3$	Green
$\langle r \rangle$	0.0005% $Fe_2O_3$	Smoky after irradiation .

The Fe content for  $K_2CO_3$ -produced specimens was some 10X greater than for  $Na_2CO_3$ -produced crystals. The view of Kats and Stevels (Ref 6) that the amethyst colour is

Card2/3



Synthetic Quartz with Amethyst Coloration

SOV/70-4-4-34/34

due to colour centres, analogous to the centres in smoky quartz, with  $\text{Fe}^{3+}$  taking the role of  $\text{Al}^{3+}$ , is confirmed.

There are 2 figures, 1 table and 6 references, of which 3 are Soviet, 2 English and 1 German.

ASSOCIATIONS: Vsesoyuznyy nauchno-issledovatel'skiy institut p'yezoopticheskogo mineral'nogo syr'ya (All-Union Scientific Research Institute for Piezo-optical Mineral Resources)  
Institut kristallografii AN SSSR (Institute of Crystallography of the Ac.Sc., USSR)

SUBMITTED:

April 29, 1959

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USCOMM-DC-61,798

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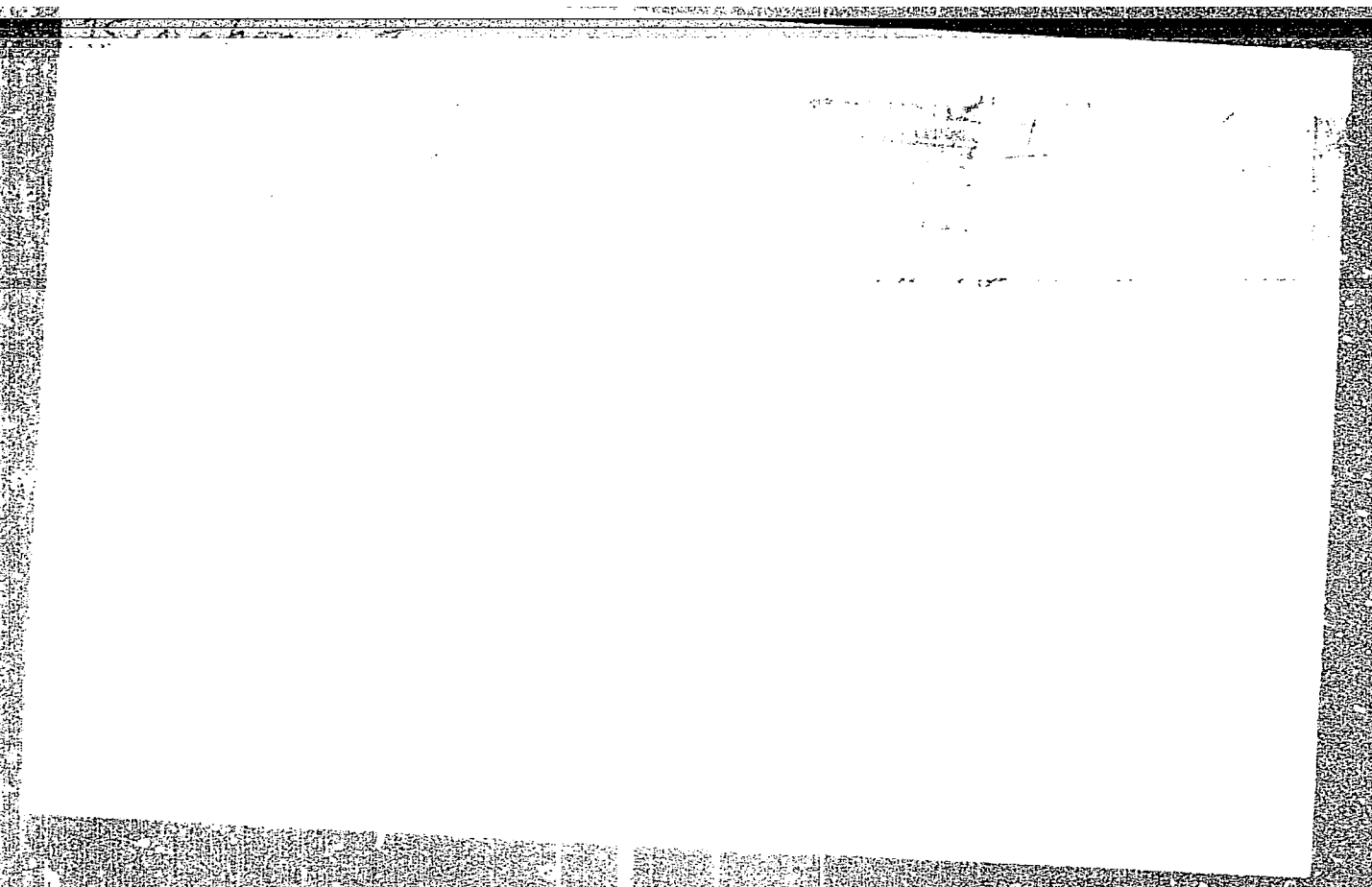
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krist. 2:61-67 '59. (MIRA 13:8)  
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1. Moskovskiy lesotekhnicheskii institut  
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3. Latvijas Padomju Socialistiskas Republikas Zinatnu akademijs korespondetajloceklis (for Eihe). 4. Vissavienibas Lenina lauksaimniecibas akademijs korespondetajloceklis (for Vanags).
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